MARKET CONCENTRATION, FOREIGN OWNERSHIP AND DETERMINANTS OF BANK FINANCIAL PERFORMANCE: EVIDENCE FROM MENA COUNTRIES

Hatem Elfeituri *

* PhD in Accounting and Finance - University of Portsmouth, UK 2016; Lecturer in Accounting and Finance, University of East London, UK; Lecturer in Accounting, University of Benghazi, Libya;
Contact details: University of East London, University Way, London, E16 2RD, UK

OPEN ACCESS

How to cite this paper: Elfeituri, H. (2018). Market concentration, foreign ownership and determinants of bank financial performance: Evidence from MENA countries. *Corporate Ownership & Control, 15(3),* 9-22.
http://doi.org/10.22495/cocv15i3art1

ISSN Online: 1810-3057
ISSN Print: 1727-9232

Received: 23.12.2017
Accepted: 01.03.2018

JEL Classification: C23, C26, F36, G21, F62, G31, G38, L41, M48, O16
DOI: 10.22495/cocv15i3art1

Abstract

The purpose of this paper is to investigate the market concentration, foreign ownership and profitability for commercial banks operating in the MENA economies over the period 1999-2012. This paper uses panel analysis via GMM estimation to examine a large sample of banks for a period that includes the recent global crisis and Arab uprising, marked by political changes and by liberalisation and market transformation. Findings indicate that the SCP hypothesis is not rejected, highlighting that increased market power yields monopoly profits. The fact that the impact of market concentration is positive in MENA economies is vital evidence, at least to a certain extent that bank performance is explained by market concentration. Findings also confirm that there is a positive and significant relationship between profitability and capital adequacy, confirming that regulators and policy makers should ensure banks are well capitalised to guarantee survival and stability for MENA banks. Cost efficiency and bank size have decreased the profitability of banks, and banks with foreign ownership are more profitable and perform better than state banks. Overall, the paper finds evidence of structural reforms and uncovers measures that have led to the improvement of regulation, and the implementation of frameworks which should continue to improve competitiveness within MENA banking sectors. In addition, future policy on the banking sector should take account of intervention to change the market structure and to stimulate competition.

Keywords: Banks, Market Concentration, Capital Structure, Profitability, Regulation, MENA Economies

1. INTRODUCTION

The financial sector in the Middle East and North Africa (MENA) economies is generally still in the early stages of development. Capital markets in these countries are neither efficient nor well-developed and in many cases are almost non-existent, whilst their financial sector is still dominated by the banking industry (Turk-Ariss, 2009; Abuzayed et al., 2012). The banking sector in MENA plays a leading role in these economies by providing funds to private and public investment projects as well as financing government deficits. The banks in the MENA region are also engaged in major economic reforms, as required by the World Trade Organisation (WTO), to which these countries either belong or plan to join.

These reforms are crucial parameters for the performance of national financial systems and national economies in general (Gattoufi et al., 2009). During the last three decades, the banking industry in MENA economies has witnessed major developments in its activities, including liberalisation of financial markets in terms of elimination of either capital or ownership barriers, transferring the control of ownership of large shares of the banking sector from government to private, and from domestic to foreign (Turk-Ariss, 2009; Farazi et al., 2011; Hassan et al., 2012). The increasing role of foreign investors is partly due to

privatised banks which were sold to them, and partly to the entry of new foreign banks[1]. The increase in foreign ownership has led to improvements in the banking efficiency of host countries, and the privatisation of state banks is believed to broaden access to financial services and to increase competition (Lensink & Naaborg, 2007; Lee-Jong, 2002). Liberalisation of the banking sector aims to attract new investments and encourage the restructuring of inefficient parts of the banking sector and to improve the financial performance. On the other hand, giving licenses to foreign banks strengthened fears of creating further risks for domestic banks as they would have to significantly increase their investments to become competitive with foreign banks (Unite & Sullivan, 2003; Lee-Jong, 2002).

The significance of a well-functioning banking sector for the growth and welfare of a country is increasingly important for assessing the impact of market structure and determinants of profitability for MENA banks, including bank-specific variables and macroeconomic variables, in the context of the Structure-Conduct-Performance Hypothesis (SCP). Investigating whether the profitability of MENA banks is due to the market concentration is of great importance for banking regulators; if bank profitability is a function of the industry's structure, then regulatory policy should intervene to change market structure to enhance competition so as to safeguard the soundness of the banking sector and the whole economy. Profitability is the key measure of a bank's success and its ability to survive in the industry and to expand its activities, therefore maximising its shareholders' returns and safeguarding the stability of the whole economy. The first objective of this paper consists of examining whether commercial bank profitability, measured in terms of ROA, ROE and NIM is solely a function of market structure (SCP) as measured by the Herfindahl index (HHI). The second aim is to examine whether bank-level variables lead to better bank performance, by examining the effect of these factors on bank profitability in eleven MENA countries during an extended period that, for the first time, includes the global crisis period. If these factors are significant, then a policy mix that maximises these factors could strengthen the stability of the financial sector and the growth of these countries. If bank size (total assets), for example, significantly affects profitability, then mergers, that naturally result in larger institutions, should be encouraged. If higher Equity to average total assets (EQAS), leads to the enhanced financial performance of banks, then regulators should encourage stricter capital adequacy requirements for MENA banks to safeguard the stability of the financial system.

The importance of this study is fourfold. First, examining whether market structure drives the profitability of MENA banks is crucial both in terms of policy implications to reshape the banking system of these countries and efficiently allocate investment funds from banks, and to develop these economies in the long run. Second, this is the first study to cover a large sample of 11 MENA countries for an extended and recent period (14 years) in the context of SCP, filling a significant gap in research for MENA economies. Third, findings of this paper will help to draw, for the first time, reliable conclusions about how ownership, macroeconomic and firm-specific factors relate to bank performance in the MENA region after the liberalisation and related transformation of their economies, which aimed to improve bank performance and promote competition. Finally, it shows if foreign participants, capital adequacy, bank size, and cost management have any significant policy implications for the banking regulators, international organisations, and other stakeholders.

The paper is organised as follows. Section two is a description of the sample used in the study and of the major developments in the MENA banking sector. Section three reviews banking literature and generates hypotheses that are examined in this study. Section four presents the methodology and model used, while section five introduces the empirical results. The conclusion and policy implication are undertaken in section six.

2. MENA BANKING SECTOR

Although MENA countries exhibit a number of similarities as a result of social and geographical proximities, these countries present several differences in terms of economic and institutional environments, including the banking industry. Countries in this region vary in size, GDP per capita and financial development. The sample considers 149 commercial banks from 11 countries, namely Bahrain, Oman, Qatar, Saudi Arabia, Kuwait, Lebanon, United Arab Emirates (UAE), Egypt, Jordan, Morocco, and Tunisia. Table 1 presents bank statistics by country, providing the first indication of similarities and differences, in terms of a number of banks and ownership type examined by country.

Table 1. Number of banks in the sample

Country	*Number of total banks*	*Domestic banks*	*Foreign banks*
Bahrain	10	7	3
Kuwait	5	5	0
Oman	6	2	4
Qatar	7	6	1
Saudi Arabia	8	8	0
United Arab Emirates	18	15	3
Egypt	23	11	12
Jordan	11	9	2
Lebanon	35	30	5
Morocco	13	9	4
Tunisia	13	7	6
Total	149	109	40

Table 2 reports the descriptive statistics for the sample in MENA economies during the study period (1999-2012). It is evident that the capitalisation of commercial banks differs considerably according to the income level of a country. Whilst average ratio of equity to assets (EQAS) is 11.42, banks that operate in Bahrain, Oman, Saudi Arabia, UAE, Kuwait and Qatar are better capitalised than other banks in other MENA countries. Differences can be justified by regulatory differences and economic developments in these countries. Regarding cost management, it is observed that banks in low-income MENA economies on average are neither cost efficient (as measured by COST/INCOME ratio) nor

[1] In particular, Citigroup, HSPC, BMP Paribas and ABN have generally opened up their business in the MENA region through subsidiaries and started competing with domestic banks in different segments of the banking industry (Turk-Ariss, 2009; Farazi et al., 2011; Hassan et al., 2012).

developed compared to other MENA economies. These observations can be explained by regulation and, administrative costs, corporate governance and bank employment policies. Banks in Egypt, Tunisia, Morocco, Lebanon, and Jordan reveal the higher cost to income than the MENA average, reflecting that the banking sectors in those markets are not as well developed or efficient in managing costs of operating banks and that regulations need to be reviewed.

Table 2. Summary statistics, mean and standard deviation (in brackets)

Country	*Cost*	*EQAS*	*Size*	*Loanast*	*Loaresg*	*SECAST*	*GDPGR*	*INF*	*Lofund*	*Exptec*	*ROA*	*ROE*
Bahrain	46.28 (14.24)	11.04 (2.76)	1.17 (1.01)	44.31 (12.78)	5.74 (4.77)	0.250 (0.13)	5.43 (1.75)	95.98 (25.69)	56.56 (16.42)	2.08 (1.62)	1.04 (1.15)	9.39 (11.11)
Oman	44.80 (6.77)	12.97 (2.24)	390 (416)	69.44 (7.97)	6.08 (4.08)	0.101 (0.061)	4.51 (3.14)	118.72 (17.22)	87.27 (9.54)	2.71 (1.58)	1.89 (1.28)	14.05 (10.11)
Qatar	32.58 (8.76)	13.90 (3.63)	1.12 (1.81)	57.26 (6.99)	5.41 (7.86)	0.206 (0.163)	12.05 (6.43)	187.83 (42.4)	(71.66) 10.707	1.64 (1.30)	2.46 (1.13)	17.89 (9.62)
Saudi Arabia	38.24 (10.82)	12.18 (3.11)	2.29 (1.74)	50.78 (9.62)	5.03 (4.93)	0.308 (0.094)	4.87 (3.05)	101.30 (10.67)	61.05 (12.72)	1.593 (0.594)	2.23 (1.58)	18.63 (13.84)
UAE	32.21 (10.11)	17.11 (5.630)	1.25 (1.89)	61.74 (11.14)	6.73 (5.97)	0.076 (0.058)	4.64 (4.15)	193.10 (41.78)	82.70 (17.13)	1.54 (0.925)	2.48 (1.55)	14.84 (7.26)
Kuwait	29.36 (8.09)	12.19 (2.70)	1.42 (1.20)	54.68 (10.93)	6.04 (3.32)	0.233 (0.108)	4.32 (5.94)	124.88 (18.13)	65.60 (12.55)	1.26 (0.418)	1.86 (1.52)	13.90 (20.99)
Egypt	54.50 (32.11)	9.60 (4.79)	576 (932)	39.87 (11.96)	13.52 (8.53)	0.252 (0.120)	4.64 (1.71)	151.65 (52.77)	47.02 (14.38)	2.505 (1.98)	0.89 (1.72)	10.75 (25.64)
Jordan	51.77 (15.41)	11.77 (6.42)	858 (1.28)	44.01 (7.41)	7.44 (6.62)	0.176 (0.072)	5.46 (2.22)	104.11 (18.34)	56.70 (13.50)	1.54 (0.722)	1.23 (1.06)	11.79 (16.51)
Lebanon	63.76 (27.81)	8.94 (4.52)	340 (489)	26.40 (8.69)	11.26 (10.58)	0.351 (0.120)	3.96 (3.33)	97.43 (13.76)	(30.71) (11.02)	1.166 (1.501)	0.76 (0.846)	12.58 (35.12)
Morocco	57.04 (24.59)	7.85 (2.99)	1.20 (1.03)	45.90 (20.10)	3.32 (3.12)	1.12 (7.63)	4.32 (2.02)	100.06 (7.10)	(46.00) (18.69)	1.685 (1.59)	0.79 (1.18)	9.43 (36.07)
Tunisia	63.26 (25.64)	11.54 (13.99)	185 (165)	62.67 (23.31)	18.08 (15.12)	0.074 (0.110)	3.93 (2.23)	109.04 (13.34)	83.33 (64.01)	1.78 (1.20)	0.30 (4.51)	6.31 (34.68)

Furthermore, in terms of market structure and competition, Table 3 presents market concentration levels and trends, proxied by HHI value, during the period of 1999 to 2012. It reveals that some MENA economies can be described as being less concentrated, while others have a high degree of bank market concentration. Banks operate under a medium degree of concentration in two Gulf countries, the UAE and Saudi Arabia, whilst the banking sectors of other Gulf countries, namely Qatar, Bahrain, Oman, and Kuwait are very concentrated, explained by the small size of those economies.

Higher degrees of concentration can be justified by the political systems in those countries which are dominated by royal families. Moreover, the GCC are considered to be oil-rich producers and having relatively recently established banking sectors. Finally, the banking industry in other countries, such as Egypt and Tunisia, is shown to be moderately concentrated, and the banking market in Lebanon could be described as a competitive market. The substantial market structure in the MENA banking market raises the essential concern that banks which operate in concentrated markets are more profitable and gain market power. Therefore, they will be able to charge higher than competitive prices for their banking products, which in turn affect their welfare costs.

Table 3. Herfindahl-Hirschman Index (HHI) market structure of commercial banks in the MENA economies

Year	*Bahrain*	*UAE*	*Saudi Arabia*	*Qatar*	*Oman*	*Kuwait*	*Jordan*	*Lebanon*	*Egypt*	*Tunisia*	*Morocco*
1999	3646	1813	1594	4594	2611	3286	3834	891	1949	2966	2257
2000	3740	1828	1579	4678	2661	3311	3800	883	2005	2831	2239
2001	3633	1705	1545	4707	2574	3310	3753	1056	2076	2624	2246
2002	3593	1657	1510	4633	2680	3353	3782	968	2079	4904	2286
2003	3433	1631	1499	4314	2590	3176	3834	1001	2024	1451	2281
2004	2682	1634	1454	3854	2767	3263	3744	1124	1936	1272	2304
2005	2488	1626	1422	3403	2687	3274	3321	1157	2029	1228	1956
2006	2554	1439	1401	3401	3005	2622	3320	1137	1787	1069	1985
2007	2401	1725	1445	3510	2923	2376	3350	1094	1562	1072	1290
2008	2222	1665	1384	3512	3094	2332	3445	1085	1643	1058	1304
2009	2337	1634	1457	3279	2919	2490	3273	1070	1564	1038	1319
2010	2391	1594	1491	3528	2738	2472	3034	973	1643	1021	1310
2011	2318	1629	1485	3777	2927	2474	2973	928	1687	1052	1514
2012	2259	1677	1472	3909	2562	2686	2955	922	1672	1100	1799

Source: Calculated by the researcher from data obtained by Bank scope.

3. LITERATURE REVIEW AND HYPOTHESES

This paper is interested in examining market concentration and the determinants of MENA banks' profitability in the context of Structure-Conduct-Performance (SCP) to obtain evidence whether market structure in MENA plays a role in explaining the financial performance of the banking industry. SCP hypothesis assumes that industry structure affects industry performance (Bain, 1951), advocating that an increase or decrease in industry concentration may have an impact on a firm's profitability (Goldberg & Rai, 1996). In the banking industry, this results in non-competitive pricing behaviour of banks with a significant market share (Berger & Hannan, 1989). In developing countries, both hypotheses were investigated, inter alia, in Taiwan (Tu & Chen, 2000) and Bangladesh (Samad,

2008), as cited by Al-Muharrami and Al-Matthews (2009). The market concentration was first employed to measure the impact of concentration on performance among banks in the domestic United States market. In this regard, Lloyd-Williams et al. (1994) investigated the applicability of two competing hypotheses, SCP and EH, to assess the structure of the banking industry in Spain using the concentration ratio and market share for each bank to characterise its efficiency over the period 1986-1988. Findings implied that market concentration is found to have a positive impact on the performance of Spanish banks measured by return on assets (ROA), which in turn supports the traditional SCP hypothesis. In the same context, the relationship between market structure and performance of European banks has been investigated by Goldberg and Rai (1996). As the European banking market is controlled by large banks with branches spread across individual countries, their study concentrates solely on large banks in each country, so that it is doubtful that branches are able to significantly impact prices. Nonetheless, slight support was detected for the SCP hypothesis; hence a simple policy of strict boundaries on cross-border acquisitions and growth is not reasonable.

In respect to MENA economies, Ben Naceur (2003) examined the impact of a bank's characteristics, financial structure and macroeconomic indicators on its net interest margins and profitability in Tunisian commercial banks for the period 1980-2000. This study found that the market concentration has a negative and significant impact on net interest margins but is insignificant with returns on average assets. Such results indicate that market concentration is less beneficial in terms of profitability for the Tunisian commercial banks and competition. Another study, which included all the Arab Gulf countries (Al-Muharrami and Matthews, 2009), evaluated the performance of the Arab Gulf Cooperation Council (GCC) banking sector in the context of the structure conduct performance (SCP) hypothesis over the period 1993-2002. In respect to methodology and data of this study, Al-Muharrami and Matthews (2009) employed the methodology of Berger and Hannan (1997) in testing the relationship between market structure and bank performance as the basic model. Data of the study covers 52 banks operating in five GCC countries during the period 1993 - 2002, as well as the UEA during the period 1995-2002. The empirical findings of the study showed that the banking business in the Arab GCC is influenced by the mainstream SCP hypothesis. In the State of Qatar, Elsiefy (2013) investigated determinates of conventional and Islamic banks' profitability over the period 2006-2011. Results support SCP hypothesis as the relation between the profitability of conventional banks and market concentration is found. Further, Lin et al (2014) examined 14 Asia Pacific economies from 2003 to 2010 to investigate the influence of bank competition, concentration, regulation and national institutions on individual bank fragility, providing evidence that greater concentration fosters financial fragility and that lower pricing power also induces bank risk exposure after controlling for a variety of macroeconomic, bank-specific, regulatory and institutional factors. According to the above arguments, the relation between a bank's profitability and market concentration could be positive; hence, the first hypothesis to examine SCP can be formulated as follows:

H_1: Bank superior profitability in MENA region is due to high market concentration (SCP hypothesis).

However, there is some evidence showing that bank profitability is affected by bank-specific and macroeconomic variables, for instance in EU (see Pasiouras & Kosmidou, 2007), and in Greece (Kosmidou, 2008; Alexiou & Sofoklis, 2009). Regarding bank-specific variables, the relationship between capital adequacy and profitability is explained by signalling theory, which argues that higher capital reveals a positive signal from the management about future firm prospects that affect the market value of a bank (Berger, 1995; Trujillo-Ponce, 2013). In contrast, bankruptcy hypothesis suggests that banks should hold more capital in order to be further away from financial distress especially in a case where bankruptcy costs are high (Berger, 1995). Whilst, the risk-return theory argues that increasing leverage leads to increased risks and then higher than expected returns indicating a negative relationship between capital and bank performance (Pasiouras & Kosmidou, 2007; Obammyi, 2014). A number of previous studies (Demirgue-kunt & Huizinga, 1999; Pasiouras & Kosmidou, 2007; Kosmidou, 2008; Sufian, 2012; Trujillo-Ponce, 2013; Sufian, 2009; Trujillo-Ponce, 2013) document that a positive relationship between capital and profitability is supported by signalling hypothesis. More recent studies by Albulescu (2015); Djalilov and Piesse (2016); Saif-Alyousfi et al. (2017) confirmed that well-capitalised banks are performing better in emerging countries and early transition countries respectively as the overall sector is more robust and they benefit from sound financial management. These arguments suggest a positive relationship between capital adequacy and profitability of MENA banks as follows:

H_2: The capital adequacy leads to increase in bank's profitability.

To examine the argument that efficient cost management is seen as a key mechanism to enhance the profitability of banks. In this respect, cost to income ratio is considered to measure the operational efficiency for commercial banks in the MENA countries. Demirguc-Kunt and Huizinga (1999); Pasiouras and Kosmidou (2007); Kosmidou (2008); Obamuyi (2014); and Dietrich and Wanzenried (2014) documented that poor cost management is one of the key variables that decreases the profitability of banks in various economies. Bejaoui and Bouzarrou (2014) highlighted the importance of operating and administrative costs, especially staff expenses, as overstaffing costs can negatively affect the profitability of banks. Such matters, in particular, MENA countries could be due to cultural and social relationships as state banks still have a large share in the economy and frequently employ more people in order to reduce unemployment rates and ensure political stability. Therefore, this paper expects that there is a negative association between cost management and a bank's profitability:

H_3: There is a negative relationship between the cost management and MENA bank's profitability.

In respect to bank size which is measured by total assets, Djalilov and Piesse (2016) argued that size is a key element to explain performance if there are economies or diseconomies of scale. In a number of recent studies, this variable is found to be negatively related to the financial performance of

banks specifying that larger banks are likely to generate lower profits when compared to small banks. Obamuyi (2014) and Tan and Floros (2012) suggested that the negative relationship between bank profitability and its size might be associated with more bureaucratic procedures which in turn negatively affect bank performance and profitability. Additionally, Obamuyi (2014) looked at Nigeria as one of the developing economies and stressed that forced mergers and acquisitions in 2006, which resulted in a drop from 89 banks to 24 groups of banks, caused a decline of returns in banks. In such matters, merger decisions should receive more attention and be carefully considered by policymakers and banking regulators to avoid having negative outputs and therefore negatively affecting the financial stability. Trujillo-Ponce (2013) and Obamuyi (2014) suggested that larger and diversified banks are more likely to exhibit poor performance, while smaller banks can be more efficient by reducing asymmetric information issues associated with lending activities. This assertion supports the argument that smaller banks display economies of scale. Also, Chen and Liao (2011) emphasised that the negative coefficient of bank size indicated that larger banks tend to make lower profits, exhibiting diseconomies of scale, whereas smaller banks are likely to gain more profits. Studies in other markets governed by Europe and America verify the existence of economies of scale. Differences can be explained by variations between two banking markets in terms of regulations of banks, qualifications of employees, levels of expertise, economic indicators and concentration level. Based on examined markets, this paper argues that the larger the bank, the larger the number of employees and the more bureaucratic the procedures, leading to negative effects on the bank's performance. The preceding arguments will formulate the fifth hypothesis:

H_4: There is a negative relationship between bank size and bank profitability.

In addition to the above discussion, the relation between risk and profitability of banks measured by the loan ratio has been investigated by a number of scholars (Chen & Liao, 2011; Pasiouras & Kosmidou, 2007; Sufian & Habibullah, 2009; Sufian, 2012; Trujillo-Ponce, 2013). They reveal a positive and significant relationship to the profitability, indicating that more loans can positively affect the profitability of commercial banks. They clearly show an increase in loans ratio resulting in improving the profitability of banks. Alexiou and Sofoklis (2009) argue that an increase in liquidity (fewer loans) will cause a decline in profitability. Such arguments highlight the trade-off between liquidity and profitability. In this regard, Trujillo-Ponce (2013) document that the larger the bank's loan portfolio is on its balance sheet, the higher is its profitability. However, this thesis tests whether there is a direct relationship between bank risk and profitability as follows:

H_5: There is a positive relationship between the loan ratio and bank profitability.

Loan loss reserves to gross loans ratio (*LOARESG*) is a measure for credit quality and credit allocation (Djalilov & Piesse, 2016; Dietrich & Wanzenried, 2014; Ahmad et al., 2012; Bejaoui & Bouzgarrou, 2014; Trujillo-Ponce, 2013; Alper & Anbar, 2011). Regarding Spanish banking profitability, Trujillo-Ponce (2013) documented this variable to be a very important determinant as profitability decreased significantly and such relationships could exist because an increase in the doubtful loans, which do not accrue income, requires a bank to allocate a major percentage of its gross margin to provision to cover expected credit losses; therefore, profitability will drop. Further, Alper and Anbar (2011) stated that credit portfolio volume and weak asset quality affect negatively profitability of banks. The control of credit quality remains a debatable matter, especially in the case of emerging economies. Confirming with Ahmad et al. (2012), this study argues that banks in MENA may be negatively influenced by increasing loss on loans leading to lower profitability of banks.

H_6: There is a negative relationship between the asset quality and bank profitability.

The impact of foreign ownership is still debatable as enhancing the health of the financial system of the host country is susceptible to weaker domestic banks. Advantages of foreign ownership on the host nation can be defined as improvements in financial banking services, encouraging competition, upgrading privatisation, spreading expertise and introducing new financial instruments. In this matter, Demirgiuc-Kunt and Huizinga (1999) as well as Claessens et al. (2001), Farazi el al. (2011), and Dietrich and Wanzenried (2014) find that banks with foreign ownership have higher margins and profits than domestic banks in developing countries. Moreover, foreign banks are more likely to have positive effects on lending practices in emerging economies. Large state-owned enterprises are heavily involved in many private-sector economic activities and the public sector still has a significant share of the sector, therefore raising the need to examine whether this role adversely affects the performance of the banking sector. Moreover, despite recent liberalisation, trade regimes in MENA remain more restrictive than those of its peers[2], raising both the need to examine how to maintain competition and the contribution of foreign participants in improving banking performance in the sector. Regulators have traditionally employed market structure as a policy variable to recommend measures aimed at increasing competition, stimulating financial liberalisation and eliminating entry barriers for foreign banks (Turk-Ariss, 2009; Bikker et al., 2012). Finally, investigating if MENA bank performance is influenced by foreign ownership, a hypothesis expressed as follows:

H_7: Foreign ownership leads to increase bank profitability in MENA.

4. DATA AND MODEL

4.1. Data

Table 4 lists variables used in this paper. Following previous studies, by Smirlock (1985) and Berger and Hannan (1993) this paper measures bank financial performance by using log of return on average assets (LROA), log of return on average equity (LROE) and log of net interest margin (LNIM). The set of variables that control bank-specific characteristics include: the logarithm of cost-to-income (LCOST); equity to total assets (LEQAS), which measures capital adequacy and capital strength; spending on

[2] MENA countries lowered tariffs during the past 20 years, in the context of trade agreements with the EU and the US but still tariffs remain high, averaging 12%, and many MENA countries have more than average trade restrictiveness.

fixed assets; and (LEXPTEC), the ratio of a bank's loans to customers and short-term funding, loans to assets and Asset size. The cost to income ratio measures efficiency in expenditures management (Pasiouras & Kosmidou, 2007; Kosmidou, 2008) and is expected to have a negative effect on bank performance because efficient banks run their activities at lower cost.

Table 4. Definitions of variables used in assessing performance and market structure

Variable	*Description*
L	Logarithm
ROA	Return on average assets is the net after tax divided by average total assets.
ROE	Return on average equity is a measure of the return on shareholder funds.
NIM/TA	Net interest margin to average total assets.
EQAS	Equity to total assets. This variable measures capital adequacy computed as equity to total assets. High capital-asset ratios indicate low leverage and therefore lower risks.
COST	The cost to income ratio. It provides information on the efficiency of the management concerning expenses relative to the revenues it generates. Higher ratios indicate a less efficient management.
LOFUND	This is a measure of liquidity computed as loans to deposits and short-term funding. Higher ratios imply lower liquidity.
SIZE	Total assets represent a proxy for bank size including earning assets + cash and due from banks + foreclosed real estate + fixed assets + goodwill.
SECAST	Total securities to total assets include loans and advances + trading securities + derivatives + available for the sale securities + held to maturity securities + equity investments + government bonds + other securities.
EXPTEC	Spending on fixed assets and technological items. Calculated by capital expenditure and other expenses to fixed assets. Capital expenses refer to costs spending on fixed assets. Fixed assets include tangible assets fixed assets (land, buildings and installations, furniture office, computers, ATMs, technological items) and intangible fixed assets such as (goodwill, software, research and development expenses, etc.).
CR	Herfindahl-Hirschman Index (HHI). The HHI is a measure of market concentration within the industry and is used as an indicator of the amount of competition among banks.
MS	A measure calculated by dividing the assets of the first largest bank with the assets of all banks operating in a country.
LOARESG	Loan loss reserves to gross loans ratio, measuring credit quality and credit allocation.
GDPGR	The real gross domestic product (GDP) growth.
INF	The real inflation rate.
FORE	Dummy variable for foreign ownership.
STATE	Dummy variable for state ownership.
Coun	Dummy variable for country effects.
Year	Dummy variable for year effects.

Source: Bankscope database, Bloomberg database and International Monetary Fund (IMF)

To examine economies of scale the log of average total assets (LSIZE) is used, as in Smirlock (1985), Lloyd-Williams (1994) and Dietrich and Wanzenried (2014). Liquidity management proxy is a bank's loans divided by deposits and short-term funding (LOFUND) as in Pasiouras and Kosmidou (2007), Samad (2008) and Obamuyi (2014). According to Olsen and Zoubi (2011), securities to total assets ratio (SECAST) includes other loans and asset-based sources of income that are expected to have positive or negative signs depending on whether the bank invests beyond optimum levels. Spending on fixed assets (EXPTEC) is our proxy and novelty. Loan-loss provisions to gross loans (LOAREASG) measures exposure to credit risk and it is expected to have a negative association with profitability. The Herfindahl-Hirschman Index (HHI) that is used in the current study as a proxy of market structure is employed by policymakers and regulators in the banking sector and is computed as follows:

$$HHI = \sum_{i=1}^{n} (MS_i)^2 \quad (1)$$

Where MS is a bank's market share in the industry and n denotes the number of firms in the sector. The larger the Herfindahl index the larger the market power.

To account for macroeconomic variables, because they may influence bank operations as suggested by some banking studies (Samad, 2008; Kosmidou, 2008; Sufian, 2012), inflation (INF) and Gross domestic product growth (GDPGR) are used in this study. To investigate whether ownership influences bank profitability, this study defines a bank as foreign-owned if the absolute majority of shares belongs to the foreign investors are more than 50%. The output of the bank is captured by ROA, ROE, and NIM, while CR denotes the concentration index estimated by HHI.

4.2. Model specification

Given the dynamic nature of this study, least squares estimation methods are likely to create biased and inconsistent estimates (Baltagi, 2001). Furthermore, microeconomics analyses comparative statistics which, though accurate on equilibrium outcomes is rather weak on the dynamic process (Blaug, 1980). The static theory is regarded as being more abstract than dynamic theory because it does not take into account inter alia lags and sequences (Schumpeter, 1954).

In addition, a number of explanatory variables are suspected to be endogenous. The more profitable the banks, the more able they are to increase their capital by retaining profits (Garcia-Herrero et al., 2009; Dietrich & Wanzenried, 2011). However, causality could also be bidirectional, since a more profitable bank may employ more people and therefore decrease its operational efficiency pointed. Also, unobserved heterogeneity across banks may exist in the MENA region, along with differences in corporate governance which cannot be easily measured, raising the need to address these concerns. This study, therefore, uses Generalised Method of Moments (GMM) estimation following Arellano and Bond (1991). GMM uses lagged values of the dependent variable in levels and in differences, as well as lagged values of other independent variables that are suspected to suffer from endogeneity, along with controls for unobserved heterogeneity and persistence of the

dependent variable. However, to deal with omitted variables the study employs the Wald test to examine the joint hypothesis that the coefficients of the regressors are not individually equal to zero. If the null hypothesis is not rejected, the equation should be re-estimated with only the control variables which were significant in the general regression. Otherwise, a less restrictive hypothesis is tested, while still attempting to decrease the number of non-significant variables to the maximum extent possible. Such estimations yield consistent estimations of the parameters, and the coefficients obtained by this way are considered to be more reliable as the number of variables is reduced to the minimum (Garcia-Herrero et al., 2009).

To empirically examine the impacts of financial performance determinants, we follow Athanasoglou et al. (2008) and Garcia-Herrero et al. (2009) and employ a dynamic linear model given by (2)

$$P_{it} = C + \delta P_{it-1} + \sum_{i=1}^{n} \lambda_i Z_i + \sum_{i=1}^{n} \lambda_i Y_i + \sum_{i=1}^{n} \lambda_i D_i + \varepsilon_{it} \quad (2)$$

Where P_{it} is the profitability measure for MENA banks and P_{it-1} is the one-period lagged profitability measured by $ROA_{it-1} or\ ROE_{it-1}$ or one-period lagged for performance measured by NIM_{it-1}. X_i are bank-specific variables, while Y_i represents macroeconomic variables and D_i is used to capture country effects, year effects and the ownership dummy variable. A value of δ denotes the speed of adjustment to equilibrium. A value of δ between 0 and 1 implies that profitability is persistent, and it will eventually return to the equilibrium level. Values close to 0 indicate a high speed of adjustment and imply a relatively competitive market structure, whereas a value close to 1 implies a less competitive market.

In order to examine bank profitability determinants in the context of SCP hypothesis, the following equations (3, 4 and 5) are run:

$$LROA_{it} = \alpha_0 + +\alpha_2 ROA_{it-1} + \alpha_2 CR_{it} + \beta_1 LCOST_{it} + \beta_2 LEQAS_{it} + \beta_3 LSECAST_{it} + \beta_4 LSIZE_{it} + \beta_5 LLOFUND_{it} + \\ + \beta_6 LEXPTEC_{it} + \beta_7 LLOARESG_{it} + Y_8 LGDPGR_{it} + Y_9 LINF_{it} + FORE + STATE + COUN + YEAR \quad (3)$$

Next, return on average equity is used as a dependent variable representing profits of banks, as well as steps of eliminating variables, repeated respectively:

$$LROE_{it} = \alpha_0 + +\alpha_1 ROE_{it-1} + \alpha_1 CR_{it} + \beta_1 LCOST_{it} + \beta_2 LEQAS_{it} + \beta_3 LSECAST_{it} + \beta_4 LSIZE_{it} + \beta_5 LLOFUND_{it} + \\ + \beta_6 LEXPTEC_{it} + \beta_7 LLOARESG_{it} + Y_8 LGDPGR_{it} + Y_9 LINF_{it} + FORE + STATE + COUN + YEAR \quad (4)$$

As net interest margins are considered a measure of operating income of banks, this variable has been investigated, as it relies on factors tested above to see whether these factors impact this variable or not:

$$LNIM_{it} = \alpha_0 + +\alpha_1 NIM_{it-1} + \alpha_1 CR_{it} + \beta_1 LCOST_{it} + \beta_2 LEQAS_{it} + \beta_3 LSECAST_{it} + \beta_4 LSIZE_{it} + \\ + \beta_5 LLOFUND_{it} + \beta_6 LEXPTEC_{it} + \beta_7 LLOARESG_{it} + Y_8 LGDPGR_{it} + Y_9 LINF_{it} + FORE + STATE + COUN + YEAR \quad (5)$$

LROA, LROE and LNIM are used as dependent variables to represent profitability measures: LROA is the log of return on total assets; LROE is the log of return on total equity, and LNIM is the log of net interest margin. With regards to independent variables, where it is the subscript indicating bank i at time t, CR indicates market concentration of banking sector and LCOST is the log of cost to income ratio; LEQAS denotes the log of Equity to total assets; LSECAST refers to total securities to total assets; LSIZE is the log of total assets; and LLOFUND denotes loans to deposits and short term funding. LEXPTEC refers to spending on fixed assets; LLOARESG represents the log of loss gross loan reserve to total loans. In respect to macroeconomic variables, LGDPGR is used to denote the real gross domestic product (GDP) growth and LINF is used to represent the real inflation rate. However, to investigate whether ownership influences bank profitability, this study categorises a bank as a state-owned bank (STATE) if the government owns more than 50%, and foreign (FORE) if the foreign investor owns more than 50%. Finally, COUN and YEAR are used to capture country and year effects, respectively.

5. EMPIRICAL FINDINGS

Estimations of GMM revealed a stable coefficient as the Sargan test indicates no evidence of over-identifying restrictions (see Tables 5, 6 and 7). Even though the equations imply that negative first-order autocorrelation is evident, this does not mean that estimates are inconsistent (Arrelano & Bond, 1991). However, the highly significant coefficient of lagged profitability measured by ROE and lagged net interest margin (NIM) at 10% and 1% confirms the dynamic character of the model specification for MENA commercial banks. Findings with respect to the market concentration (CR) suggest that increases in market concentration lead to an increase in MENA banks' profitability in some regressions. The sign of the coefficient is positive and significant implying that the structure-conduct-performance (SCP) hypothesis (1) is accepted somehow, stressing that monopoly profit for banks is caused by a concentrated market. The fact that the impact of market concentration is positive in MENA economies is vital evidence and is at least to a certain extent consistent with Demirguc-Kunt and Huizinga (1999) and Dietrich and Wanzenried (2014). Concentrated markets in MENA should raise a concern for regulators and policymakers about how to stimulate competition to force banks to develop themselves by introducing new banking products and services rather than charging their customers higher fees.

Table 5. Regression results using GMM (first differences) for bank profitability using Log ROA as dependent variable

$LROA_{it} = \alpha + \beta_1(LROA(-1) + \beta_2 LCOST_{it} + \beta_3 LEQAS_{it} + \beta_4 LSECAST_{it} + \beta_5 LSIZE_{it} + \beta_6 LLOFUND_{it} + \beta_6 LLOARESG_{it} + \beta_7 LEXPTEC) + \alpha_1 CR_{jt} + \alpha_2 MS_{jt} + \gamma_2 LGDPGR_{jt} + \gamma_2 LINF_{jt} + FORE + STAT + COUN + YEAR$				
Variable	***First difference***	***First difference***	***First difference***	***First difference***
LROA(-1)	0.001 (0.169)	0.001 (0.180)	-0.053*** (-4.042)	-0.054*** (-4.019)
LCOST	-1.77*** (-23.50)	-1.77*** (-24.68)	-1.612*** (-16.56)	-1.581*** (-16.18)
LEQAS	0.586*** (6.189)	0.568*** (6.315)	0.633*** (6.827)	0.633*** (7.176)
LSECAST	0.00 (0.033)	-0.005 (-0.189)	-0.005 (-0.226)	-0.016 (-0.660)
LSIZE	-0.329*** (-5.280)	-0.277*** (-9.285)	-0.226*** (-6.793)	-0.221*** (-6.956)
LLOFUND	-0.319*** (-4.088)	-0.317*** (-4.274)	-0.455*** (-4.728)	-0.448*** (-4.656)
LLOARESG	-0.432*** (-9.797)	-0.413*** (-10.59)	-0.457*** (-7.613)	-0.460*** (-8.286)
LEXPTEC	0.512*** (13.95)	0.505**** (13.84)	0.574*** (11.42)	0.548*** (11.43)
CR	0.292 (0.284)	0.688 (0.798)	3.497*** (3.221)	3.644*** (3.605)
MS	0.954 (0.840)			
LGDPGR	-0.007 (-0.564)	-0.006 (-0.505)		
LINF	-0.075 (-1.034)	-0.053 (-0.858)	-0.039 (-0.530)	
FORE	0.418** (2.257)	0.495** (2.53)	0.604*** (3.11)	0.619*** (3.206)
STATE	0.289 (1.573)	0.355** (2.029)	0.266 (1.619)	0.365** (2.287)
2001	-0.033 (-1.200)	-0.032 (-1.062)	-0.036 (-1.135)	-0.035 (-1.103)
2002	-0.055** (-2.258)	-0.063*** (-2.692)	-0.077** (-2.537)	-0.075 (-2.454)
2004	-0.103 (-1.648)	-0.113** (-2.006)	-0.146** (-2.237)	-0.144*** (-2.215)
2009	-0.045 (-1.531)	-0.048 (-1.643)	-0.128*** (-3.954)	-0.129*** (-3.914)
2010	0.066** (2.49)	0.060** (2.27)	0.138*** (5.612)	0.137 (5.724)
2011	-0.028 (-1.086)	-0.032 (-1.142)	-0.055** (-2.078)	-0.056** (-2.18)
2012	0.019 (1.160)	0.015 (1.071)	0.033 (2.376)	0.034 (2.428)
Sargan test p-value	67.49135 0.460196	68.63240 0.455720	73.06676 0.315263	73.16571 0.312398
*Arellano-Bond test AR(1)in first difference P-value	-5.701222 0.0000	-4.277137 0.0000	-3.754727 0.0002	-4.021250 0.0001
**Arellano-Bond test AR(2)in first difference P-value	-0.425490 0.6705	-0.610595 0.5415	0.412003 0.6803	0.448022 0.6541

*Note: * significant at the 10% level*
*** significant at the 5% level*
**** significant at 1% level*

Examination of the impact of capital adequacy on financial performance is found to be positive and significant, confirming that banking regulations in MENA are moving forward to ensure that MENA banks depend on higher capital in their capital structure to avoid risks of default and therefore generate higher profitability and growth in the business. Such findings support the current discussion about capital adequacy ratios (e.g. Berger, 1995; Demirgue-kunt & Huizinga, 1999; Pasiouras & Kosmidou, 2007; Kosmidou, 2008; Sufian & Habibullah, 2009; Sufian, 2012; Trujillo-Ponce, 2013; Albulescu, 2015; Djalilov & Piesse, 2016), which argue that capital adequacy is positively associated with profitability under the hypothesis that well-capitalised banks may enjoy access to cheaper and less risky sources of funds and better quality asset markets. Similarly, Elsiefy (2013) supports the argument that well-capitalised banks face lower risks of bankruptcy and therefore generate higher profit. The positive relationship between profitability and capital suggests that banks with superior capital tend to have more opportunities to diversify their business operations by strengthening their ability to assume risks and attract funds at low cost (Berger, 1995; Obamuyi, 2013). The spending on fixed assets is found to have a positive impact on the profitability of MENA banks, confirming the argument that capital expenditures play a role in increasing banks' profits. It can be justified that foreign ownership and financial deregulations taking place over this period might have forced commercial banks to increase their investments in fixed assets and greater banking techniques. In this matter, Chelo and Manlagnit (2011), Chen and Liao (2011), and Pasiouras and Kosmidou (2007) suggested that foreign bank entry is associated with spillover effects on the banking sector through their ownership-specific advantages and possession of technology, and through increased competition.

However, as predicted, weak cost efficiency (cost/income) in MENA banks is one of the determinants to lower profitability for commercial banks in the region, reporting a negative coefficient and highly significant for all regressions. Such findings are in line with Pasiouras and Kosmidou

(2007), Kosmidou (2008), Alexiou and Sofoklis (2009), and Trujillo-Ponce (2013). They find that bad cost management is one of the key contributors to decrease profitability for banks. It has been argued that the more efficient the bank, the higher the profitability will be, indicating that banks are considered to be efficient when they control costs of operations and administration, and in that way improve their financial performance (Dietrich & Wanzenried, 2014; Obamuyi, 2013; Demirguc-Kunt & Huizinga, 1999; and Bejaoui & Bouzarrou, 2014). In this respect, it is important to recognise that efficient cost management is crucial to enhance the performance of banks, particularly in regard to operating costs and staff expenses. This study argues that the main cause for such a result is that administrative and personnel expenses are relatively high in the MENA economies due to the low quality of regulation, corruption control and other social and political purposes.

Regarding bank size (SIZE) represented by average total assets, findings confirmed the expectation that a bank's profitability (ROA, ROE and NIM) is negatively and statistically affected by increasing the bank's size for all regressions and therefore hypothesis (4) is supported. The findings advocate that diseconomies of scale indicate that large banks are likely to generate lower profits, which means that an increase in bank size would result in higher levels of marketing, operational and bureaucratic costs. Thus, the scale effect on profitability remains ambiguous (Djalilov & Piesse, 2016). In other studies, Obamuyi (2013) and Tan and Floros (2012) argue that the negative association could be justified, as banks are becoming extremely large and the bureaucratic procedures would have negatively affected their performance. Likewise, Trujillo-Ponce (2013) stated that larger and more diversified banks tend to perform poorly, suggesting that smaller banks can more efficiently reduce asymmetric information problems related to lending. From this point, banking regulators and policymakers in MENA should pay more attention to merger decisions since they are more likely to be negative than positive.

Table 6. Regression results using GMM (first differences) for bank profitability using ROE as dependent variable

$LROE_{it} = \alpha + \beta_1(LROE(-1) + \beta_2 LCOST_{it} + \beta_3 LEQAS_{it} + \beta_4 LSECAST_{it} + \beta_5 LSIZE_{it} + \beta_6 LLOFUND_{it} + \beta_6 LLOARESG_{it} + \beta_7 LEXPTEC) + \alpha_1 CR_{jt} + \alpha_2 MS_{jt} + \gamma_2 LGDPGR_{jt} + \gamma_2 LINF_{jt} + FORE + STAT + COUN + YEAR$			
Variable	***First difference***	***First difference***	***First difference***
LROE(-1)	0.026* (1.749)	0.023* (1.753)	0.025* (1.819)
LCOST	-1.873*** (-20.72)	-1.789*** (-21.69)	-1.709*** (-19.88)
LEQAS	-1.330*** (-14.348)	-1.298*** (-15.078)	-1.292*** (-14.55)
LSECAST	-0.019 (-0.610)	-0.057** (-2.249)	-0.07*** (-2.733)
LSIZE	-0.013 (-0.132)	-0.250*** (-7.447)	-0.245*** (-6.982)
LLOFUND	-0.319*** (-3.256)	-0.404*** (-5.095)	-0.400*** (-4.921)
LEXPTEC	0.176** (2.341)	0.201*** (3.155)	0.153*** (2.454)
LLOARESG	-0.232*** (-4.750)	-0.291*** (-6.411)	-0.295*** (-6.484)
CR	-3.672*** (-3.140)	-4.970*** (-4.946)	-4.952*** (-4.960)
MS	-3.935** (-2.441)		
LGDPGR	0.102*** (5.056)	0.120*** (6.595)	0.124*** (6.71)
LINF	0.029 (0.270)	-0.000 (-0.001)	
FORE	-0.133 (-0.840)	-0.334** (-2.027)	-0.337** (-2.128)
STATE	-0.152 (-1.337)	-0.238 (-2.287)	-0.236** (-2.255)
2003	-0.109*** (-2.856)	-0.139*** (-3.577)	-0.137*** (-3.576)
2004	-0.092 (-1.145)	-0.196*** (-2.593)	-0.194** (-2.520)
2005	0.094 (0.953)	0.233** (2.505)	0.252*** (2.828)
2006	-0.205*** (-2.954)	-0.162** (-2.446)	-0.158 (-2.255)
2007	-0.142* (-1.853)	-0.050 (-0.805)	-0.060 (-0.94)
2010	0.027 (1.053)	0.064*** (2.809)	0.066 (2.860)
2011	-0.004 (-0.148)	0.004 (0.176)	0.006 (0.245)
2012	0.031* (1.735)	0.059*** (4.447)	0.063 (4.469)
Sargan test p-value	64.92546 0.616708	68.55778 0.526414	68.97969 0.512048
*Arellano-Bond test AR(1)in first difference P-value	-6.312862 0.0000	-4.981712 0.0000	-5.091441 0.0000
**Arellano-Bond test AR(2)in first difference P-value	-1.637001 0.1016	-1.107742 0.2680	-1.182408 0.2370

*Note: * significant at the 10% level*
*** significant at the 5% level*
**** significant at 1% level*

The credit quality measured by loan loss reserves to gross loans ratio ($LOARESG$) can be observed from analyses results. This variable is found to have a statistically significant negative and rather robust impact on profitability of commercial banks in all regression cases, supporting hypothesis (6) and the findings of other studies (Dietrich & Wanzenried, 2014; Ahmad et al., 2012; Bejaoui & Bouzgarrou, 2014; Trujillo-Ponce, 2013; and Alper & Anbar, 2011). Actually, the control of credit quality is still an arguable matter especially in the case of developing economies like MENA. This paper suggests that commercial banks operating in MENA need to show their capabilities to control loss on loans by employing effective recovery and advancing of loans policy because less loss on loans portfolios leads to maintaining higher profitability for banks and stability of the whole financial system. Trujillo-Ponce (2013), who examined Spanish banks, suggests that this variable is a central factor as profitability decreases significantly and such an occurrence could exist because an increase in the doubtful assets, which do not increase income, entails a bank to allocate a major percentage of its gross margin to provision to cover expected credit losses; hence, profitability will decrease.

Turning to bank ownership, foreign ownership is found to support the argument that banks with foreign ownership are more profitable than domestic banks in MENA economies when ROA is run as a dependent variable, to find some support for hypothesis (7), which is in line with previous studies (Demirguc-Kunt et al., 1999; Dietrich & Wanzenried, 2014; and Farazi et al., 2011). Banks with foreign ownership in MENA are more likely to overcome any informational disadvantages relative to domestic banks through superior banking technology and level of development. For macroeconomic variables, the inflation is found to be positively and significantly related to net interest margin. This fact is explained by the theory that banks in inflation periods are more profitable, and that management for those banks seems to anticipate future inflation, and therefore interest rates have been properly adjusted. The effect of GDPGR on bank profitability using ROE is statistically significant and positive, which implies that bank profits in MENA are generated in the growing economic period. Turning to the year effect, it can be observed that 2002 in some regressions has a negative and significant relationship with the profitability of banks due to the collapse in economic activity that arose in developed economies. The economy in the European Union for the period 2000-2001 and the United States in 2002 and 2003 is influenced by that recession and thereby affected MENA economies. The years of the Global Financial Crisis, 2007, 2008 and 2009, are negative and statistically significant in some cases with profitability in terms of ROA. Two years, 2011 and 2012, are negatively related and significant to ROA in all cases as countries such Tunisia, Libya, Egypt, Yemen, Syria and Bahrain experienced deterioration in their financial and economic systems due to political conflict.

Table 7. Regression results using GMM (first differences) for bank performance using NIM as dependent variable

$$LNIM_{it} = \alpha + \beta_1(LNIM(-1) + \beta_2 LCOST_{it} + \beta_3 LEQAS_{it} + \beta_4 LSECAST_{it} + \beta_5 LSIZE_{it} + \beta_6 LLOFUND_{it} + \beta_6 LLOARESG_{it} + \beta_7 LEXPTEC) + \alpha_1 CR_{jt} + \alpha_2 MS_{jt} + \gamma_2 LGDPGR_{jt} + \gamma_2 LINF_{jt} + FORE + STAT + COUN + YEAR$$

Variable	*First difference*	*First difference*	*First difference*	*First difference*
LNIM(-1)	0.137*** (8.289)	0.138*** (8.080)	0.143*** (8.702)	0.144*** (8.789)
LCOST	-0.199*** (-3.099)	-0.165*** (-2.638)	-0.235*** (-4.398)	-0.226*** (-4.503)
LEQAS	0.346*** (8.273)	0.349*** (8.858)	0.344*** (11.58)	0.344*** (11.61)
LSECAST	0.048*** (4.305)	0.047*** (4.168)	0.048*** (4.065)	0.047*** (4.051)
LSIZE	-0.131*** (-3.280)	-0.133*** (-3.235)	-0.081** (-1.95)	-0.102*** (-3.01)
LLOFUND	0.055 (1.031)	0.056 (1.134)		
LEXPTEC	0.042 (1.117)			
LLOARESG	-0.147*** (-5.543)	-0.139*** (-5.17)	-0.138*** (-5.466)	-0.143*** (-6.230)
CR	-0.816 (-1.166)	-0.354 (-0.521)	-0.469 (-0.672)	
MS	-0.048 (-0.066)	0.090 (0.125)	-0.071 (-0.104)	
LGDPGR	-0.199*** (-9.37)	-0.188*** (-9.163)	-0.171*** (-8.776)	-0.175*** (-9.057)
LINF	0.451*** (3.967)	0.484*** (4.391)	0.481*** (4.562)	0.473*** (4.630)
FORE	0.020 (0.203)	0.039 (0.394)	-0.055 (-0.560)	-0.002 (-0.021)
STATE	-0.491*** (-3.431)	-0.467*** (-3.156)	-0.546*** (-3.742)	-0.492*** (-4.368)
2001	-0.149*** (-4.886)	-0.135*** (-4.861)	-0.132*** (-4.961)	-0.132*** (-5.025)
2009	-0.143*** (-7.51)	-0.145*** (-8.087)	-0.141*** (-8.835)	-0.136*** (-8.207)
2010	-0.008 (-0.581)	-0.008 (-0.641)	-0.002 (-0.219)	-0.001 (-0.118)
2011	-0.058*** (-3.739)	-0.054*** (-3.831)	-0.047*** (-3.276)	-0.049 (-3.332)
Sargan test p-value	68.00924 0.442627	67.55486 0.492427	68.30357 0.466855	68.18565 0.539106
*Arellano-Bond test AR(1)in first difference P-value	-4.756441 0.0000	-4.662228 0.0000	-4.287358 0.0000	-4.216813 0.0000
**Arellano-Bond test AR(2)in first difference P-value	1.310499 0.1900	1.370154 0.1706	1.058820 0.2897	1.340797 0.1800

*Note: * significant at the 10% level*
*** significant at the 5% level*
**** significant at 1% level*

6. CONCLUSION

The objective of this paper has been to investigate determinants of MENA banks profitability in the context of SCP hypothesis. It examined whether banks that operate in concentrated markets are able to make monopoly profits. It found in some cases that a bank's performance can be better explained by the Structure-Conduct-Performance (SCP) hypothesis that claims that a highly concentrated market leads to collusive behaviour among banks, resulting in superior performance. Also, in the context of this model, this study investigated the impact of bank-specific, industry-specific and macroeconomic factors on the profitability of MENA banks, so that findings can be used by regulators, policymakers and other stakeholders to optimise managerial, human and capital resources, and to enhance viability of and confidence in the financial system.

The policy implications that can be beneficial either for regulators, bank management, shareholders and other stakeholders are as follows: the empirical analysis that investigated the impact of market structure on profitability showed collusive power in some cases of the banking industry which asserts that increased market power yields monopoly profits supporting the SCP hypothesis. Therefore, the high profits were the consequence of higher market concentration and collusion; the providing of financial services would hinder the potential development of the MENA economy. It indicates that higher profits influence the regulatory decision in terms of mergers which can be used by regulators and policymakers to reassess the market structure and performance to decide whether they should intervene to change market structure to stimulate competition and improve quality of banking services and to deter insolvency.

In respect to capital adequacy, findings show that well-capitalised banks (Equity to Assets) are more profitable implying that regulators should ensure that MENA banks are better capitalised in order to generate profit and grow in the sector, withstand potential financial crises and avoid insolvency. A significant finding is also that government policies in MENA should encourage commercial banks to raise their capital to safeguard the stability of the financial system in case of systemic liquidity risks, as well as enabling commercial banks to advance more loans to a market and thus to provide an environment which will accelerate economic growth.

However, bank size in terms of total assets in MENA economies contributed in reducing profitability, suggesting that larger banks were less profitable than small banks (diseconomies of scale). Such a fact is considered to be important to regulators, policymakers, bank managers, and prospective investors in the MENA economies as to highlight that growth in total assets by acquisition or mergers may not be appropriate and effective in this region. The negative impact of size on profitability could be attributed to increased bureaucratic procedures and other factors attributed to an increase in the number of employees, departmental expenditures and appointing of unskilled staff. Regarding the quality of asset allocation, such processes must be enhanced as credit risk is negatively related to profitability. Thus, government and regulators in MENA should promote the development of capital markets to ensure the transparency of banks, and provide for better monitoring of bank activities. This involves training in credit assessment and risk allocation.

In spite of deregulation of banking systems, commercial banks in MENA still have higher costs which result in lower profits. In order for MENA banks to be competitive and more efficient, they should go further in reducing their administrative costs, particularly those of the state banks which tend to be overstaffed. It was also found that some macroeconomic factors, namely GDP growth and inflation, affect profits. GDP growth (GRGDP) had a significant and positive effect on ROA, but also a negative and significant impact on net interest margin. The inflation (inf) was found to have a higher and positive relationship with net interest margin. A possible justification is that in the inflation period, banking industry costs lead to more transactions and commonly to more extensive branch networks, and finally to higher profit revenues showing that during inflation periods banks effectively shift their costs to customers and increase their profits.

Finally, the study found that banks with foreign ownership are more profitable and perform better than state banks. This result can be explained by foreign banks' technological advantages which can be strong enough to overcome any informational disadvantages in lending or by raising funds locally. It could also be argued that foreign banks tend to make lower profits than domestic banks in well-developed economies because entering into the market of industrial and well-developed economies is more difficult due to high costs and strong regulations. In addition, foreign banks' technological and efficiency advantages in developed economies can be insignificant, while facing higher informational and reputational disadvantages.

Limitations of this study are associated with the nature of data, as it used secondary data, primarily collected from banks' financial statements; therefore, this kind of data may be subjected to measurement and allocation errors which are common to traditional accounting reports. Furthermore, some financial data were not provided by commercial banks in MENA such as non-performing loans and number of ATMs. In addition, this study covers only a limited period, 1999-2012, as financial data before this period are unavailable. However, this study only covered these issues for conventional banks operating in MENA economies. Accordingly, it is recommended that future studies go further to investigate Islamic banks in MENA and to identify whether there are differences in productivity, profitability, and revenues when compared to conventional banks. In addition, the period of study can be extended, and future studies can also include a number of other variables which have not yet been investigated. Finally, this study can be further expanded to incorporate a comparison with other emerging markets in order to see whether or not there are important similarities or differences which could prove useful for the banking industry.

REFERENCES

1. Albulescu, C. T. (2015). Banks' profitability and financial soundness indicators: A macro-level investigation in emerging countries. *Procedia Economics and Finance, 23,* 203-209. https://doi.org/10.1016/S2212-5671(15)00551-1
2. Abuzayed, B., Al-Fayoumi, N., & Gharaibeh, H. (2012). Competition in MENA countries banking markets, *International Journal of Financial Services Management*, *5,* 272-300. https://doi.org/10.1504/IJFSM.2012.046951
3. Al Shamsi, F., Aly, H., & El-Bassiouni, M. (2009). Measuring and explaining the efficiencies of the United Arab Emirates banking system, *Applied Economics*, *41,* 3305-3519. https://doi.org/10.1080/00036840801964773
4. Alexiou, C., & Sofoklis, V. (2009). Determinants of bank profitability: Evidence from the Greek banking sector. *Economic Annals*, *182,* 93-118. https://doi.org/10.2298/EKA0982093A
5. Al-Muharrami, S., & Matthews, K. (2009). Market power versus efficient-structure in Arab GCC banking. *Applied Financial Economics, 19,* 1487-1496. https://doi.org/10.1080/09603100902845478
6. Alper, D., & Anbar, A. (2011). Bank specific and macroeconomic determinants of commercial bank profitability: empirical evidence from Turkey, *Business and Economics Research Journal*, *2,* 139-152.
7. Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, *58(2),* 277-297. https://doi.org/10.2307/2297968
8. Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68(1),* 29-51. https://doi.org/10.1016/0304-4076(94)01642-D
9. Athanasoglou, P., Brissmis, S., & Delis, M. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets Institutions & Money*, *18,* 121-136. https://doi.org/10.1016/j.intfin.2006.07.001
10. Awdeh, A., Salloum, A., & Hokayem, E. (2013). Measuring the degree of competition in the Arab banking systems. *International Research Journal of Finance and Economics*, *107,* 40-49.
11. Bain, J. S. (1951). Relation of profit rate to industry concentration: American manufacturing, 1936-1940. *Quarterly Journal of Economics*, *65(3),* 293-324. https://doi.org/10.2307/1882217
12. Baltagi, B. (2008). *Econometric analysis of panel data.* Chichester, West Sussex, UK: John Wiley and Sons Ltd.
13. Bapat, D. (2013). Growth, profitability and productivity in public sector banks: an assessment of their interrelationship. *The Journal of Bank Management*, *3,* 50-57.
14. Beck, T., De Jonghe, O., & Schepens, G. (2013). Bank competition and stability: cross-country heterogeneity. *Journal of financial Intermediation*, *22(2),* 218-244. https://doi.org/10.1016/j.jfi.2012.07.001
15. Bejaoui, R., & Bouzgarrou, H. (2014). Determinants of Tunisian bank profitability. *The International Journal Business and Finance Research, 8,* 121-131.
16. Ben Abdelkader, I., & Mansouri, F. (2013). Competitive conditions of the Tunisian banking industry: An application of the Panzar-Rosse model. *African Development Review*, *25(4),* 526-536. https://doi.org/10.1111/1467-8268.12047
17. Ben Naceur, S. (2011). The effects of bank regulations, competition, and financial reforms on banks' performance. *Emerging Markets Review*, *12(1),* 1-20. https://doi.org/10.1016/j.ememar.2010.08.002
18. Ben Naceur, S., Ben-Khedhiri, H., & Casu, B. (2011). *What drives the performance of selected MENA banks? A Meta-Frontier analysis* (IMF working paper No. 11-34). https://doi.org/10.5089/9781455217922.001
19. Ben Naceur, S., Cherif, M., & Kandil, M. (2014). What drives the development of the MENA financial sector? *Borsa Istanbul Review*, *14(4),* 212-223. https://doi.org/10.1016/j.bir.2014.09.002
20. Berger, H. (1989). The price-concentration relationship in banking. *The Review of Economics and Statistics*, *71(2),* 291-299. https://doi.org/10.2307/1926975
21. Berger, A., DeYoung, R., Genay, H., & Udell, G. (2000). Globalization of financial institutions: Evidence from cross-border banking performance. *Brookings-Wharton Papers on Financial Services,* 23-120.
22. Berger, A. (1995). The profit-structure relationship in banking-test of market power and efficient-structure hypothesis. *Journal of Money, Credit, and Banking*, *27(2),* 404-431. https://doi.org/10.2307/2077876
23. Bikker, J. A., Shaffer, S., & Spierdijk, L. (2012). Assessing competition with the Panzar-Rosse model: The role of scale, costs, and equilibrium. *Review of Economics and Statistics, 94(4),* 1025-1044. https://doi.org/10.1162/REST_a_00210
24. Boyd, J. H., & De Nicolo, G. (2005). The theory of bank risk taking and competition revisited. *The Journal of finance*, *60(3),* 1329-1343. https://doi.org/10.1111/j.1540-6261.2005.00763.x
25. Chau, F., Deesomak, R., & Wung, J. (2014). Political uncertainty and stock volatility in the Middle East and North African (MENA) countries. *Journal of International Financial Market, Institutions and Money*, *28*, 1-19.
26. Cetorelli, N., & Gambera, M. (2001). Banking market structure, financial dependence and growth: International evidence from industry data. *The Journal of Finance*, *56(2),* 617-648. https://doi.org/10.1111/0022-1082.00339
27. Cherif, M., & Dreger, C. (2014). *Institutional determinants of financial development in MENA countries* (DIW Berlin Discussion Paper No. 1422). https://doi.org/10.2139/ssrn.2519081
28. Claessens, S. (2009). Competition in the financial sector: Overview of competition policies. *The World Bank Research Observe*, *24*, 83-118. https://doi.org/10.1093/wbro/lkp004
29. Claessens, S., Demirgüç-Kunt, A., & Huizinga, H. (2001). How does foreign entry affect domestic banking markets? *Journal of Banking & Finance*, *25(5),* 891-911. https://doi.org/10.1016/S0378-4266(00)00102-3
30. Daly, S., & Frikha, M. (2017). Determinants of bank performance: Comparative study between conventional and Islamic banking in Bahrain. *Journal of the Knowledge Economy*, *8(2),* 471-488. https://doi.org/10.1007/s13132-015-0261-8
31. Demirguc-Kunt, A., & Huizinga, H. (1999). Determinants of commercial bank interest margins and profitability: Some international evidence. *World Bank Economic Review*, *13(2),* 379-408. https://doi.org/10.1093/wber/13.2.379
32. Demsetz, H. (1973). Industry structure, market rivalry, and public policy. *The Journal of Law & Economics*, *16(1),* 1-9. https://doi.org/10.1086/466752
33. Djalilov, K., & Piesse, J. (2016). Determinants of bank profitability in transition countries: What matters most? *Research in International Business and Finance*, *38,* 69-82. https://doi.org/10.1016 /j.ribaf.2016.03.015
34. Dietrich, A., & Wanzenried, G. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions & Money*, *21(3),* 307-327. https://doi.org/10.1016/j.intfin.2010.11.002

35. Dietrich, A., & Wanzenried, G. (2014). The determinants of commercial banking profitability in low-middle-, and high-income countries. *Quarterly Review of Economics and Finance*, *54(3),* 337-354. https://doi.org/10.1016/j.qref.2014.03.001
36. Elsiefy, E. (2013). Determinants of profitability of commercial banks in Qatar: Comparative overview between domestic conventional and Islamic banks during the period 2006-2011. *International Journal of Economics and Management Sciences*, *2,* 108-142.
37. Farazi, S., Feyen, E., & Rocba, R. (2011). *Bank ownership and performance in the Middle East and North Africa Region* (Policy research working paper 5620. World Bank). https://doi.org/10.1596/1813-9450-5620
38. Fungacova, Z., & Poghosyan, T. (2011). Determinants of bank interest margins in Russia: Does bank ownership matter? *Economic Systems*, *35(4),* 481-495. https://doi.org/10.1016/j.ecosys.2010.11.007
39. Garcia-Herrero, A., Gavila, S., & Santabarbara, D. (2009). What explains the low profitability of China banks? *Journal of Banking and Finance*, *33(11),* 2080-2092. https://doi.org/10.1016/j.jbankfin.2009.05.005
40. Ghosh, S. (2014). Risk, capital and financial crisis: Evidence for GCC banks. *Borsa Istanbul Review*, *14(3),* 145-157. https://doi.org/10.1016/j.bir.2014.06.003
41. Ghosh, S. (2015). Political transition and bank performance: How important was the Arab Spring? *Journal of Comparative Economic*, *44(2),* 372-382. DOI: 10.1016/j.jce.2015.02.001
42. Goldberg, L., & Rai, A. (1996). The structure-performance relationship for European banking. *Journal of Banking and Finance*, *20(4),* 475-771. https://doi.org/10.1016/0378-4266(95)00021-6
43. Goldsmith, R. W. (1969). *Financial structure and development.* New Haven: Yale University Press.
44. Hannan, T. (1991). Foundation of the structure-conduct-performance paradigm in banking. *Journal of Money, Credit, and Banking*, *23(1),* 68-84. https://doi.org/10.2307/1992764
45. Hassan, M., Sanchez, B., Ngene, G., & Ashraf, A. (2012). Financial liberalisation and foreign bank entry on the domestic banking performance in MENA countries. *African Development Review*, *24(3),* 195-207. https://doi.org/10.1111/j.1467-8268.2012.00318.x
46. Hassan, T., Tahoun, A., & Acemoglu, D. (2014). *Corruption networks and the balance of power in Egypt's Arab Spring* (2013 Meeting paper, Society for Economic Dynamic 443, Society for Economic Dynamic).
47. Islam, M. (2003). Regulations and supervision of financial institutions in GCC countries. *Managerial Finance, 29(7),* 17-41. https://doi.org/10.1108/03074350310768328
48. Kammoun, N., & Ammar, A. (2012). The evolution of competition in banking in a transition economy: An empirical analysis if the Tunisian banking sector. *International Journal of Business and Social Science, 3,* 120-133.
49. Khandelwal, P., & Roitman, A. (2013). *The economics of political transactions: implications for Arab Spring* (IMF working paper 69. IMF, Washington, DC). https://doi.org/10.5089/9781475569643.001
50. Kosmidou, K. (2008). The determinants of banks' profits in Greece during the period of EU financial integration. *Managerial Finance*, *34(3),* 146-159. https://doi.org/10.1108/03074350810848036
51. La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2002). Government ownership of banks. *The Journal of Finance*, *57(1),* 265-301. https://doi.org/10.1111/1540-6261.00422
52. Lee-Jong, K. (2002). *Financial liberalisation and foreign bank entry in MENA* (Working paper, Financial sector strategy and policy, World Bank).
53. Lensink, R., & Hermes, N. (2004). The short-term effects of foreign bank entry on domestic bank behaviour: Does economic development matter? *Journal of Banking and Finance*, *28(3)*, 553-568. https://doi.org/10.1016/S0378-4266(02)00393-X
54. Lensink, R., & Naaborg L. (2007). Does foreign ownership foster bank performance? *Applied Financial Economics*, *17(11),* 881-885. https://doi.org/10.1080/09603100600827653
55. Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, *35,* 688-726.
56. Lloyd-Williams, D., & Molyneux, P. (1994). Market structure and performance in Spanish banking. *Journal of Banking and Finance*, *18(3),* 433-443. https://doi.org/10.1016/0378-4266(94)90002-7
57. Lowe, N. (2013). *Modern world history.* Hampshire, UK: Palgrave Master Series.
58. Mahboub, A., & Abdou, A. (2012). Can market contestability relieve economic stress in Arab Spring countries? *Journal of International Business and Finance*, *4,* 83-91.
59. Mamatzakis, E., Staikouras, C., & Koutsomanoli-Fillipaki, N. (2005). Competition and concentration in the banking sector of the South Eastern European region. *Emerging Markets Review, 6(2),* 192-209. https://doi.org/10.1016/j.ememar.2005.03.003
60. Martinez-Miera, D., & Repullo, R. (2010). Does competition reduce the risk of bank failure? *Review of Financial Studies*, *23(10),* 3638-3664. https://doi.org/10.1093/rfs/hhq057
61. Mensi, S. (2010). Measurement of competitiveness degree in Tunisian deposits banks: An application of the Panzar and Rosse model. *Panoeconomicus*, *57(2),* 189-207. https://doi.org/10.2298/PAN1002189M
62. Mostafa, M. (2007). Modelling the efficiency of GCC banks: A data envelopment analysis approach. *International Journal of Productivity and Performance Management*, *56(7),* 623-643. https://doi.org/10.1108/17410400710823651
63. Nacerur, S. (2003). *The determinants of the Tunisian banking industry profitability: Panel evidence* (Working paper).
64. Noman, A. H. M., Chowdhury, M. M., Chowdhury, N. J., Kabir, M. J., & Pervin, S. (2015). The effect of bank specific and macroeconomic determinants of banking profitability: A study on Bangladesh. *International Journal of Business and Management*, *10(6),* 287-297. https://doi.org/10.5539/ijbm.v10n6p287
65. Obamuyi, T. (2014). Determinants of banks' profitability in developing economy: Evidence from Nigeria. *Organisation and Markets in Emerging Economies*, *4,* 97-11.
66. Olson, D., & Zoubi, T. (2011). Efficiency and bank profitability in MENA countries. *Emerging Markets Review*, *12(2),* 94-110. https://doi.org/10.1016/j.ememar.2011.02.003
67. Panzar, J., & Rosse, J. (1987). Testing for "monopoly" equilibrium. *The Journal of Industrial Economics*, *35(4),* 433-456. https://doi.org/10.2307/2098582
68. Pasiouras, F., & Kosmidou, K. K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance*, *21(2),* 222-237. https://doi.org/10.1016/j.ribaf.2006.03.007

69. Polemis, M. (2016). Does monopolistic competition exist in the MENA region? Evidence from the banking sector. *Bulletin of Economic Research*, *67(S1),* S74-S96. https://doi.org/10.1111/boer.12046
70. Poshakwale, S., & Qian, B. (2011). Competitiveness and efficiency of the banking sector and economic growth in Egypt. *African Development Review*, *23(1),* 99-120. https://doi.org/10.1111/j.1467-8268.2010.00275.x
71. Rasiah, D. (2010). Review of literature and theoretical on determinants of commercial bank profitability. *Journal of Performance Management, 23(1),* 23-49.
72. Sahile, G. S., Tarus, D., & Cheruiyot, T. (2015). Market structure-performance hypothesis in Kenyan banking industry. *International Journal of Emerging Market*, *10(4),* 697-710. https://doi.org/10.1108/IJoEM-12-2012-0178
73. Saif-Alyousfi, A. Y., Saha, A., & Md-Rus, R. (2017). Profitability of Saudi commercial banks: A comparative evaluation between domestic and foreign banks using CAMEL parameters. *International Journal of Economics and Financial Issues*, *7(2),* 477-484.
74. Samad, A. (2008). Market structure, conduct and performance: Evidence from the Bangladesh banking industry. *Journal of Asian Economics, 19(2),* 181-193. https://doi.org/10.1016/j.asieco.2007.12.007
75. Shehzad, C., Haan, J., & Scholtens, B. (2013). The relationship between size, growth and profitability of commercial banks. *Applied Economics*, *45(13),* 1751-1765. https://doi.org/10.1080/00036846.2011.637896
76. Smirlock, M. (1985). Evidence on the (non) relationship between concentration and profitability in banking. *Journal of Money, Credit, and Banking*, *17(1),* 69-83. https://doi.org/10.2307/1992507
77. Srairi, S. (2013). Ownership structure and risk-taking behaviour in conventional and Islamic banks: evidence for MENA countries. *Borsa Istanbul Review, 13(4),* 115-127. https://doi.org/10.1016/j.bir.2013.10.010
78. Sufian, F. (2009). Determinants of bank profitability in developing economy: Empirical evidence from China banking sector. *Journal of Asia-Pacific Business*, *10(4),* 281-307. https://doi.org/ 10.1080/10599230903340205
79. Sufian, F. (2012). Determinants of bank profitability in developing economies: Empirical evidence from the South Asian banking sectors. *Contemporary South Asia*, *20(3),* 375-399. https://doi.org/10.1080/09584935.2012.696089
80. Sufian, F., & Habibullah, M. (2009). Determinants of bank profitability in a developing economy: Empirical evidence from Bangladesh. *Journal of Business Economics and Management, 10(3),* 207-217. https://doi.org/10.3846/1611-1699.2009.10.207-217
81. Tarawneh, M. (2006). A comparison of financial performance in the banking sector: Some evidence from Omani commercial banks. *International Research Journal of finance and Economics*, *3,* 101-112.
82. Trujillo-Ponce, A. (2013). What determines the profitability of banks? Evidence from Spain. *Accounting and Finance*, *53(2),* 561-586. https://doi.org/10.1111/j.1467-629X.2011.00466.x
83. Tu, A., & Yuan Chen, S. (2000). Bank market structure and performance in Taiwan before and after the 1991 liberalisation. *Review of Pacific Basin Financial Markets and Policies*, *3(4),* 475-490. https://doi.org/10.1142/S0219091500000236
84. Turk-Ariss, R. (2009). Competitive behaviour in Middle East and North Africa banking systems. *The Quarterly Review of Economics and Finance*, *49(2),* 693-710. https://doi.org/10.1016/j.qref.2008.03.002
85. Unite, A., & Sullivan, M. (2003). The effect of foreign entry and ownership structure on the Philippine domestic banking market. *Journal of Banking and Finance*, *27(12),* 2323-2345. https://doi.org/10.1016/S0378-4266(02)00330-8